THE WHITE GHOST

The cold weather season is again upon us and the likelyhood of our department responding to heating related emergencies is amplified. From fireplaces to oil burners, chimney fires to carbon monoxide, the cold weather season brings increased hazards for us to confront.

John Norman's book, ***Fire Officer Handbook of Tactics,*** considers the "White Ghost" as a true life threatening emergency both for the occupants of a structure and responding firefighters. The white ghost is a term used to describe a cloud of vaporized heating oil mixed with air that is heated above its flashpoint and seeking a source of ignition. This hazardous occurrence is synonnomous with oil burning furnaces.

Modern oil burners have a tank that houses the fuel oil, a high pressure oil gun that atomizes the fuel oil for efficient ignition, an air fan that mixes the oil particles with air, a heating element, and a fire box which contains the fire transfering heat though coils by way of convection. Oil is drawn from the tank through a pipeline to the oil pump at the high pressure gun. The high pressure gun then atomizes the oil generating fine particles that mix with air producing a

combustible mixture (heating oil has a flash point ranging from 100 to 130 degrees based upon fuel type). The heating element completes the chain reaction generating ignition in the firebox. The phenomenon of the white ghost is typically created from incomplete combustion due to a delay in the ignition process.

As a burner runs for an extended period, the walls of the fire box heat up providing a preheating condition for the fuel oil. Once the temperature as indicted on the thermostat is reached, the burner shuts off. When demand for more heat is requested and a delay in ignition from the heating element occurs, the oil/air mixture is vaporized by the preheated temperature contained in the firebox and a fog-like haze with the smell of heating oil is disbursed. Vaporization causes the expansion of the vapor through out the structure presenting an explosive and flammable mix seeking an ignition source.

When faced with this extremely hazardous situation, consider these actions:

- Evacuate the structure
- If dispatched on a reduced assignment, establish a water supply
- Stretch the appropriate hoselines and have them in place
- Wear full PPE including SCBA; this is an IDLH atmosphere
- Ventilate the structrure fully; consider PPV
- Use atmospheric monitoring devices to determine LEL (Lower Explosive Limit)
- Remove probable ignition sources
- Shut off fuel source to the burner and the control circuit to the pump, fan, and igniter

As with any fire related emergency, follow all departmental SOP's that are applicable and exercise good judgement as it relates to safety. Remember:

WE ALL GO HOME